## REMARKS

Claims 1-15 and 17-21 are all the claims pending in the application. Claims 1-12, 15-18 and 21 are rejected. Claims 13, 14, 19 and 20 are objected to because of their subject matter. Claims 1-7, 9, 11, 13-15, 17 and 20 are amended, with claims 14 and 20 being placed into independent form by incorporating the limitations from claims 1 and 15, respectively. New claims 22-26 are added, which represent claims 14/2, 14/3, 14/5, 14/6 and 14/7, respectively, in independent form. Certain additional amendments to the independent claims are made to further define the features of the invention and other changes to the dependent claims are made for consistency.

### *Claim Objections*

Claims 13, 14, 19, and 20 are objected to under 37 CFR § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. This objection is traversed for at least the following reasons.

Claims 13 has been amended to further define the subject matter of its parent claim, which is limited to the method of manufacturing a preform. Claims 14 and 20 are placed into independent form and new claims 22-26 are added.

### *Claim Rejections - 35 USC § 103*

**Claims 1-7, 11-12, 15, 17-18, and 21 are rejected under 36U.S.C. 103(a) as being unpatentable over Howard (US 1,853,002) in view of Ikeuchi (US 5,738,701) and Yoshikuni(US 2003/0000252 Al).** This rejection is traversed for at least the following reasons.

**Claims 1-3 and 5-7**

Applicants have amended independent claims 1-3 and 5-7 in order to expressly and uniformly define the claimed method as being applicable to (1) the manufacture of glass preforms for press molding by (2) forming a glass gob with a glass preform forming member. These express limitations to the stated manufacturing process is clearly distinguishable from, and precludes a combination of, several of the cited prior art references. The substantive impact of these limitations are explained subsequently with regard to each of the cited and applied prior art references.

**Ikeuchi et al**

In framing the rejection, the Examiner notes with respect to claims 1-3, 5-7, and 15 that Ikeuchi et al discloses a method for separating glass gobs with particular reference to Figure 4. The Examiner asserts that Ikeuchi shows moving a support member to approach the front end of the nozzle (3b) (Figures 48-4b) and receiving a glass melt flow from a nozzle (3a or 3b) onto a support (10) (figure 4c). The Examiner further asserts that Ikeuchi et al discloses that the support is either intermittently or continuously lowered (fig 4d-4f) and when the glass retention ends, the support member is lowered at high speed to cut the glass (Fig 4g). Further, the Examiner asserts that during the lowering, a constriction is formed between the support and the nozzle (fig. 4e) which yields the breakpoint during the rapid lowering stage of the support (element 6d displayed in greater detail in figure 8). Finally, the Examiner observes at page 5 of the Office Action that Ikeuchi et al states that the disclosed method provides "defectless non-abrasive glass gobs" (Column 1, lines 45-47) and that the "thus obtained glass gob, after cooling solidification may be press molded in a mold" (Column 5, lines 48-51).

Admitted Lack of Disclosure of Transfer Step or Timing

Based on the foregoing text in Ikeuchi, the Examiner states at page 5 of the Office Action that Ikeuchi's formation of a gob in a support member and its subsequently shaping in "a mold," "strongly implies a transferring step from a support member to a mold (e.g. "glass forming member")." The Examiner admits, however, that Ikeuchi does not explicitly provide details of the transfer step or the timing of the transfer with respect to the forming step. While the Examiner looks to Howard to remedy this deficiency, the teachings of Howard are ineffective to suggest the claimed invention, as detailed subsequently.

No Separate Support and Forming Members In Ikeuchi

As now clearly recited in claims 1-3 and 5-7, support for a glass gob is provided by "a support member" and the formation of a preform is made by a "glass preform forming member". The "support member" and the "glass preform forming member" are separate parts. By contrast, Ikeuchi carries out both the supporting of a glass gob and the formation of a preform with a single supporting member.

In the Response to Arguments at page 11 of the Office Action, the Examiner asserts that there has been "a sufficient showing either of the implicit disclosure of these specific elements within the Ikeuchi or their trivially obvious nature when viewed in light of the Howard reference." As taught in the present application and as detailed subsequently on the basis of fundamental principles of U.S. Patent Law, the absence of the express limitation in the claims to separate support members and glass preform forming members is not implicit, trivial or obvious in view of the disclosure in Howard.

No Transfer Period in Ikeuchi

The Examiner admits that Ikeuchi fails to provide details with respect to timing. More fundamentally, since there is no separate supporting member and forming member, Ikeuchi cannot teach or suggest the existence of any period during which a glass preform forming member is stopped for transfer of a glass gob from a support member to the glass preform forming member. As detailed subsequently, this limitation is not inherent, trivial or obvious.

Stopping Period The Same As Gob Transfer Period in Ikeuchi

Claims 1-3 and 5-7 all require that "the period during which the glass preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member is made shorter than a gob preparation period." In the absence of any need for a transfer period between a support member and a glass preform forming member due to the absence of separate structures, there is no basis for concluding that a transfer period is made shorter than a gob preparation period. Even if the period for transfer of the gob and the stopping period are considered, the period during which the preform forming member is stopped for transfer of the glass gob from the support member is always equal to the gob preparation period. Again, as detailed subsequently, this limitation is not inherent, trivial or obvious.

Invention Has Improved Productivity

Applicants also submit that the present invention improves productivity by shortening of the period during which the preform forming member is stopped for transfer of the glass gob from the support member to the glass preform forming member. First, this advantage cannot be achieved in Ikeuchi since there is no transfer, as claimed. Second, such shortening is not a tradeoff against the gob distorting forces which decrease product quality due to the acceleration of a glass preform forming member during movement.

**Howard**

The Examiner looks to Howard for a teaching of a method of "suspended charge feeding" wherein a glass stream flowing continuously from a nozzle (11) is first discharged to a "supporting member" (14, 15, 16) followed by a concerted transfer step of the entire charge of glass material to a mold (18). The Examiner refers to the embodiment in Figures 6 and 7, where the charge is inverted during the transfer process, and asserts that "this 'well known method' (Pg 1, lines 45-59) serves a materially equivalent purpose to the 'support member' disclosed in the Ikeuchi process, namely to provide a glass gob free from the defects and distortions associated with direct feeding of the molten stream into a forming member. The Howard process simply makes explicit the claimed process of transferring the glass gob from the support member (14, 15, 16) to a mold or 'forming member' (18) for subsequent shaping into a glass article."

The Examiner identifies a "significant difference" from Ikeuchi as being the use of sheers (13) to sever the charge from the flowing stream." However, a further and more significant difference is the use of separate supporting members and molds to prepare a preform. Yet another significant difference is the product being formed. Specifically, Howard teaches the use of supporting members 13-15 and a mold 18 for preparation of a final product. The mold 18 is a parison mold, where 17 is a receptacle. As is known to those skilled in the art, a parison mold is not suitable for use as a glass preform forming member. Thus, there would be no basis for one skilled in the art to even consider the combination of Howard and Ikeuchi et al.

**Ikeuchi and Howard Are Not Combinable To Achieve the Invention**

The Examiner points to Howard's identification of a deleterious "batting effect" or distortion, and asserts that this problem would be solved by the Ikeuchi process, supporting a combination of the glass gob forming process in Ikeuchi with the glass forming operation taught

by Howard. However, the two references would not be combinable to attain the present invention for several reasons.

Different Stage of Preform Production

In Ikeuchi, the formation of a preform is carried out with a supporting member (there is no separate preform formation member). The Examiner proposes to modify Ikeuchi's method by substituting supporting members 13 to 15 and mold 18 of Howard for the supporting member of Ikeuchi to reach the present invention. In making this proposal, the Examiner assumes that a glass gob of Ikeuchi is molded with Howard's mold 18, based on the premise that the glass gob of Ikeuchi may be subjected to press molding with a mold of the type taught by Howard.

However, the article prepared with supporting members 13-15 in Howard is a preform, that later will be used for preparation of a final product. In other words, Howard's supporting member does not transfer a glass gob, but transfers a preform, to the mold 18. Mold 18 does not prepare a preform.

Thus, the preform prepared by the Ikeuchi supporting member corresponds to the product prepared with Howard's supporting members 13-15. Similarly, the product of Howard prepared with supporting members 13-15 corresponds to the preform for press molding of the present invention that is prepared after a transfer from the glass preform forming member. The step of Howard in which the mold 18 is used is not the forming operation that results in a preform, as set forth in the amended claims of the present application, but in a final product.

Specifically, in order to clarify the output of the claimed method, the claims are amended to change "a glass article" to "a preform for press molding." This will make it clear that the mold 18 used in Howard to shape a preform into a product would not be useable in Ikeuchi et al to form a glass gob into a preform, as claimed.

Different Timing

As already noted, the Examiner admits that there is a difference in timing between the claimed invention and the prior art teachings, but asserts that process timing is simply the result of a tradeoff between product production rate and the gob distorting forces which decrease product quality. The Examiner also asserts that the shortening of stopping period is simply the optimization of a process step.

However, in the present invention, the purpose of for shortening the period during which the preform forming member is stopped for transfer of the glass gob from the support member to the preform forming member with respect to a "gob preparation period" is not based on an improvement of product production rate. It is necessary for specific technical reasons, which are understood by considering the rate of production and the goal of high quality production of preforms..

First, it should be understood that in order to improve the product production rate by shortening the time period necessary for preparing a single glass gob in the manufacturing method of the present invention, an increase of flowing rate of molten glass from a nozzle is needed. However, the method defined by the amended claims do not specify that the time period necessary for preparing a single glass gob is shortened. For example, the time period necessary for preparing a single glass gob is defined as "gob preparation period" in amended claim 1 and as a "fixed cycle period" in amended claim 5. Neither of these claims mentions that the recited period is shortened.

Second, according to the present invention, the period during which the preform forming member is stopped for transfer of the glass gob from the support member to the preform forming member is made shorter than the "gob preparation period" in claim 1, for example. This

technical feature does not affect the product production rate, but is directed to suppressing the distortion of a glass gob by a reduction of the acceleration of a preform forming member.

The Examiner asserts that process timing generally gives rise to a tradeoff between product production rate and the gob distorting forces which decrease product quality, and assumes that a shortening of the stopping period is merely an optimization of a process step. However, according to the present invention, the product production rate and the gob distorting forces are not a tradeoff but are factors that can be controlled independently. This is because a separate support member and a separate glass forming member are used to produce a preform, according to the presently claimed invention. The consideration of a control of the periods for gob preparation and the period for stopping the glass preform forming member are not made on the basis of a "determination of the optimum or workable ranges of said variable," as proposed by the Examiner.

**Yoshikuni Does Not Remedy Deficiencies of Ikeuchi and Howard**

**Yoshikuni**

The Examiner cites Yoshikuni for a teaching that "the cast glass is subject to acceleration" during transfer of a gob to a receiving or "forming" mold, and asserts that the process is "similar to that outlined by the Applicants." The Examiner points to Fig. 3 and Column 7, lines 17-35 of the reference for a disclosure that glass gobs may be supported on a gas film emitted through ports in the supporting surface. Finally, the Examiner states "more importantly, the reference indicates that equipment acceleration exerts a force upon the glass, deforming the glass" and that " the reference indicates that 'the greater the acceleration exerted on the glass... the greater the tendency of the glass to distort' (Column 1, Lines 55-67)."

Again, for reasons explained with regard to Ikeuchi and Howard, there are separate and independent considerations of throughput and distortion in a process as claimed where there is a separate supporting member and separate glass preform forming member. In short, there is no basis for a tradeoff between product production rate and the-gob distorting forces which decrease product quality, as suggested by the Examiner, and the time during which the glass forming member is stopped for transfer of the glass gob from the support member is not a result-effective variable of the gob molding process that may be empirically defined. It is directly related to the use of separate support member followed by the use of a separate glass preform forming member that results in production of a glass preform.

For the foregoing reasons, independent amended claims 1-3 and 5-7 are allowable over the combination of Ikeuchi, Howard and Yoshikuni.

**Claim 4 , 11 and 12**

These claims would be patentable on the basis of their dependency on allowable parent claims for the reasons given above.

**Claim 15**

In framing the rejection and in response to Applicants' previous arguments, the Examiner states that "from the time the gob is severed from the melt (fig 4g) through the reengagement of the support member to said melt (fig 4c) "contact between the support member and the lower end of the glass melt is "temporarily broken".

However, Applicants again submit that a significant difference is that the support member is moved downward in such a manner that contact is between the support member and the lower end of the glass melt is temporary broken prior to finally being deposited on the support member, as explained at paragraphs [0078]- [0088] with respect to Figs. 5a-5c and in

paragraph [108] as previously noted. The movement of the support downward at a speed greater than the flow speed is described at paragraph [0079] and the advantages of the movement are described at paragraphs [0081]-[0085].

Applicants respectfully submit that the claim expressly states the movement downward to provide a temporary break of the gob from the support member is during the step of moving the support member downward at a speed greater than the flow speed of the glass melt, causing the glass gob to drip onto the support member. The temporary release of the lower part of the go from the support member causes the gob to retract slightly, forming a glass unit that has the proper weight and size so that it can then drip onto the support member (or another mold or form) in a predictable and repeatable manner, with high quality and low stress. This clearly is different from the prior art.

Further, this feature makes the limitation set forth in Claim 15 wherein "the support member is cooled by circulation of a coolant through the support member" to be significant, as it results in the glass and support being at relative temperatures so that the gob is properly released from the support without leaving residue, and at a proper timing.

**Claims 8, 9, 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Howard (US 1,853,002) Ikeuchi (US 5,738,701), and Yoshikuni (US 2003/0000252 Al) as applied above and further in view of Murakami (US 2003/0131628 A1).** This rejection is traversed for at least the following reasons.

The Examiner asserts that Ikeuchi teaches method of separating individual glass gobs from a glass melt which is continuously flowing from nozzle and implicitly requires a transfer step of transferring the formed gob from the support member to a forming member. The Examiner admits that Ikeuchi does not teach the details of the transfer step nor the timing, as

claimed. The Examiner looks to Howard for a teaching of the details of such transfer step, based on a "suspended charge feeding" process that is considered to be old and well known in the art. The Examiner admits that neither of Ikeuchi and Howard specifically limits the process timing. The Examiner looks to Yoshikuni for teachings that support an effort by one skilled in the art to seek a balance between maximizing a gob production rate while minimizing the distorting forces imparted to the softened glass gobs which result in decreased product quality. The Examiner admits that the details of claims 8-10 are not taught in the cited references and looks to Murakami for the missing teachings.

**Murakami**

The Examiner looks to Murakami for a variety of support members, especially to Figure 2 where a support member is tilted to cause the glass gob to fail off and Figures 3 and 4 where support members which are rotated 360° to transfer a glass gob and the glass gobs are received on two different surfaces of the support member. However, Murakami does not remedy the deficiencies of Ikeuchi, Howard and Yoshikuni as it does not disclose the use of separate support members and separate preform forming members for producing a glass preform with the timing as set forth in the claims.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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